REMARKS

Favorable reconsideration of the present application is respectfully requested.

Claim 20 has been canceled and the subject matter thereof has been incorporated into Claim 7. Withdrawn Claims 14 and 15, which depended from the canceled Claims 10 and 11, have also been canceled.

Claim 7 has been further amended to recite that the high pressure chamber has a sidewall integrally linked to an outer peripheral part of the introduction wall and surrounding the mounting chamber. Basis for this is found in Figure 3. New Claim 21 recites a supercritical fluid as the high pressure fluid.

The claimed invention is directed to a high pressure processing apparatus for supplying a high pressure fluid to a processing object. It has been known, for example, to dry semiconductor wafers or liquid crystal substrates using a high pressure, particularly supercritical, fluid such as carbon dioxide. According to a feature of the invention, a high pressure chamber adapted to contain the processing object therein is provided with a fluid dispersion mechanism for dispersing a flow of high pressure fluid toward the surface of the processing object from a fluid introduction passage, wherein the fluid dispersion mechanism includes a closure plate formed with a plurality of through holes and placed between the introduction wall and the mounting table in a opposed relation to the *entire* surface of the processing object on the mounting table, wherein the closure plate is fitted to an internal surface of an integral sidewall of the high pressure chamber. For example, the closure plate 27 in Figure 3 is provided with through holes 28 and is fitted to an internal surface of the sidewall 4a. The opposed relation of the closure plate to the entire surface of the processing object allows the high pressure fluid to be supplied evenly and collide approximately perpendicular to the surface 2a of the wafer 2, after which the rotation of the wafer by the

rotatable support 12 will cause the high presure fluid to be distributed radially outward in through the fluid discharge passage 26 (page 7, lines 3-13).

In the case of a high pressure processing apparatus which supplies a supercritical fluid to an object such as a wafer (Claim 21), the supercritical fluid can brought into collision with the surface of the wafer, i.e., approximately perpendicular thereto, and in an evenly dispersed state generates turbulence at the surface of the wafer which allows the processing liquid in the wafer to be quickly displaced. The drying time can therefore be significantly reduced (page 12, lines 3-18).

Claims 7-9, 13, and 20 were rejected under 35 U.S.C. § 103 as being obvious over the newly cited Japanese publication 63-073626 (Amada et al) in view of U.S. patent publication 2003/0049937 (Worm et al). According to the Office Action, Amada et al discloses all of the features of Claim 7 other than a gap between the closure plate and the introduction wall, but such a gap would have been obvious in Amada et al, in view of the arrangement shown in Figure 26 of Worm et al. This rejection is respectfully traversed.

Amada et al discloses a device for drying a wafer by blowing clean air against the wafer. To this end, clean air is jetted from centrally located dispersion holes 7 and 8 directed toward the circumferential fringe of the treatment chamber. Figures 1 and 2 appear to illustrate that the dispersion holes 7-8 are oriented radially outward for this purpose. The air stream is thus "formed into a *laminar* flow" (see Abstract), to thereby dry the wafer and suppress the adhesion of foreign matter thereto. Needless to say, a *turbulent* flow resulting from the collision of air with the wafer would run contrary to the goal in Amada et al of creating a laminar air flow.

As the Office Action has correctly recognized, Amada et al fails to teach that the fluid dispersion mechanism comprises a closure plate formed with a plurality of through holes and placed in opposed relation to the entire surface of the processing object, so as to make a gap

with the introduction wall so that the high pressure fluid can be supplied through the gap to each of the through holes. It also lacks the feature of Claim 20 (now Claim 7) that the fluid dispersion mechanism includes a closure plate in opposed relation to the *entire* surface of the processing object on the mounting table. Instead, the dispersion holes 7 and 8 are provided at the outlet of an air pipe at a small central region, from which the air is blown radially in a laminar flow onto the wafer.

This structural difference is not incidental but stems from the entirely different functional concept of Amada et al. Amada et al is intended to create a laminar flow of high pressure air to blow away foreign matter while drying the wafer. The centrally located dispersion holes 7 and 8 therefore blow the air onto the wafer with a radial component so that the dynamic pressure of the radially blown air will push the foreign matter outwardly. A closure plate provided in opposed relation to the entire surface of the processing object on the mounting table would make no sense therein since the air of Amada et al must be blown radially.

On the other hand, the present invention provides a closure plate in opposed relation to the entire surface of the processing object on the mounting table so that the fluid may be applied to collide with the wafer surface. This is particularly advantageous with the use of a supercritical fluid (Claim 21) in which turbulent flow is thereby generated to efficiently displace the cleaning substances (see page 12, *supra*).

In view of the shortcomings of Amada et al with respect to Claims 7-9, 13, and 20, it was the position of the Office Action that it would nonetheless have been obvious for one skilled in the art to have provided Amada et al with a closure plate fitted to an internal surface of the high pressure chamber so as to make a gap with the introduction wall, in view of Worm et al.

However Worm et al cannot render it obvious for one skilled in the art to provide the apparatus of Amada et al with a closure plate fitted to an internal surface of the side wall of the high pressure chamber since this is not taught in Worm et al. Instead, Worm et al discloses a *rotating* spray assembly, not one fitted to an internal surface of the side wall of the chamber.

Moreover, the claims have been further amended to recite that the sidewall of the high pressure chamber is "integrally linked to an outer peripheral part of the introduction wall and surrounding the mounting table," and that the fluid discharge passage is provided in the sidewall at an outward position relative to the processing object. In contrast, the "sidewall" in Figure 1 of Amada et al is a separate ring-shaped splash preventing cylinder 15. While the "sidewall" in Figure 2 of Amada et al is integral with the introduction wall, the fluid discharge passage is not provided in the sidewall but is instead in the bottom wall of the device. Similarly, while Worm et al does not describe the location of the fluid discharge in Figure 26, fluid discharge appears to be provided at a central location surrounding the drive shaft for the wafer supporter. For this reason as well, the amended claims are believed to clearly define over any combination of the above references.

New Claim 21 limits the invention to a supercritical fluid. It is respectfully submitted that Amada et al is not analogous prior art with respect to the invention of this claim. The outstanding rejection is based upon 35 U.S.C. § 103. Therefore, Amada et al and Worm et al must both be either in the same field of endeavor or must be reasonably pertinent to the particular problem with which the inventor was concerned. M.P.E.P. § 2141.01(a). That is, before one considers whether it would have been obvious to one of ordinary skill in the art to modify Amada et al in view of Worm et al "to create a shower which effectively treats the entire top surface of the wafer uniformly with fluid to achieve the expected result," it must first be determined that Amada et al and Worm et al are both analogous prior art.

Claim 21 and Worm et al are both directed to processing apparatuses using supercritical fluid. For example, the present application explains that rapid drying by using a supercritical fluid results from the reaction between the supercritical fluid and the residual resist layer in the wafer, which is enhanced by the generation of turbulence in the supercritical fluid due to the collision of the supercritical fluid against the wafer. In contrast, Amada et al simply works by blowing *air* outwardly in a laminar flow. Amada et al therefore has no relation to the problems confronting the would-be inventor attempting to improve a processing apparatus using a supercritical fluid, and so the combination of Amada et al and Worm et al cannot pass the threshold inquiry of analogousness, let alone provide a motivation to modify the prior art in accordance with the claim.

Withdrawn Claims 16-19 ultimately depend from Claim 7, and should also be included in any patent issuing from the present application.

Applicants therefore believe that the present application is in a condition for allowance and respectfully solicit an early Notice of Allowability.

Respectfully submitted,

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